The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PETER M. RENTZEPIS

Appeal No. 2000-0700
Application No. 08/453,320

ON BRIEF

Before HAIRSTON, DIXON, and GROSS, **Administrative Patent Judges**.

DIXON, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-5 and 7-30, which are all of the claims pending in this application.

We AFFIRM-IN-PART.

BACKGROUND

The appellant's invention relates to a two-photon four-dimensional optical memory. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A radiation memory comprising:

a three-dimensional volume of a medium

that is sensitive to radiation in its absorption band so as to undergo an anomalous, stable, change in a physical property of the medium, which physical property affects the passage of radiation through the medium, from a first level to a second level,

that, regardless of a prevailing level of the physical property of the medium, has and exhibits a relatively greater impediment to a transmission of radiation of a relatively shorter wavelength, a relatively higher frequency and a relatively higher energy in a straight path through the medium, and

that, regardless of a prevailing level of the physical property of the medium, has and exhibits a relatively lesser impediment to a transmission radiation of a relatively longer wavelength, a relatively lower frequency and a relatively lower energy in a straight path through the medium; and

radiation-directing means for directing two radiation pulses,

each of which has an individual wavelength sufficiently long, a frequency sufficiently low and an energy sufficiently low so as to be non-interactive with the medium to cause (i) any change in the physical property of the medium, or (ii) any change in a straight-line propagation, which straight-line propagation through the medium is unaffected regardless of what level of its physical property the medium exhibits along the path or portions thereof,

to temporal and spatial intersection within the volume of the medium so that, by satisfaction of the quantum mechanical equations of two-photon interaction, (i) a portion

of the volume of the medium at a locus of intersection interacts with each and with both of the radiation pulses by process of two-photon interaction, while (ii) portions of the volume of medium outside this locus are non-reactive with either radiation pulse; and

radiation-timing means for controlling the temporal phase of one of the two directed radiation pulses relative to the other of the two directed radiation pulses in order to select the volume portion of their intersection whereat occurs the two-photon interaction.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Bron et al. (Bron)	3,466,616	Sept. 09, 1969
Fajans	3,715,734	Feb. 06, 1973
Adamson	3,609,706	Sep. 28, 1971
Swainson et al. (Swainson)	4,466,080	Aug. 14, 1984
Savit et al. (Savit)	4,707,787	Nov. 17, 1987

Claims 1-5 and 7-11 stand rejected under 35 U.S.C. § 112, first and second paragraphs as being indefinite and insufficiently disclosed. Claims 1-5 and 7-30 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Bron, Fajans, Adamson, Swainson or Savit.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 19, mailed Aug. 9, 1999) for the examiner's reasoning in support of the rejections, and to the appellant's brief (Paper No. 17, filed Oct. 6, 1997) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. As a consequence of our review, we make the determinations which follow.

35 U.S.C. § 112, FIRST AND SECOND PARAGRAPHS

The examiner rejects claims 1-5 and 7-11, based upon the use of the language "regardless of a prevailing **level** of the physical property of the medium." Appellant argues that this language is not indefinite and is supported by the specification. (See brief at pages 5 and 6.) Appellant argues that when the language of the claim is read in light of the disclosed invention and in light of the antecedent language establishing the "medium" and the "first level" and "second level" it is clear that "the medium uniformly and consistently presents a relatively greater impediment to the trans-mission of relatively shorter wavelength radiation, and a relatively higher [sic; lesser]

impediment to the transmission of relatively longer wavelength radiation." **Id.** We agree with appellant that this language of claim 1 does particularly point out and distinctly claim the invention and this language is supported by corresponding disclosure in the specification.

35 U.S.C. § 102

Appellant entitles the response to the examiner's rejections under 35 U.S.C.

§ 103 rather than under 35 U.S.C. § 102. Since the examiner did not apply any rejection under 35 U.S.C. § 103, we will treat these responses as addressing the rejections under 35 U.S.C. § 102. (See recitation of 35 U.S.C. § 102 at brief, page 5 and heading of 35 U.S.C. § 103 at page 7).

Appellant argues, generally, that the prior art references do not teach or suggest the invention as claimed with respect to the use of plural beams at the same time and same space to effectuate any change in the memory. (See brief at page 9.) We disagree. For example, Swainson teaches the use of "two photons from the individual beams are simultaneously absorbed in a single molecule so that no migration is required to generate the active region." (Swainson at col. 9.) Clearly, Swainson teaches the use of two photons (i.e., plural beams) at the same location and at the same time. Therefore, this argument is not persuasive. Appellant argues that the prior art does not teach the language of claim 1 with respect to the "radiation-timing means for controlling the temporal phase of one of the two directed radiation pulses relative to the other of the two directed radiation pulses in order to select the volume portion of their intersection whereat occurs the two-photon interaction." (Emphasis omitted.) (See brief at page 10.) The examiner directs appellant's attention to column 7 of Swainson for a teaching of this claim limitation. We find no support for the examiner's position with respect to controlling the temporal phase of one of the beams. Therefore, we agree with appellant that Swainson does not expressly teach the

invention as recited in the language of claim 1. Furthermore, from our review of the other prior art references applied by the examiner, and since the examiner has not identified any correspondence between the prior art references and the language of claim 1, we find that the applied prior art similarly does not teach the invention as recited in claim 1, and we will not sustain the rejection of claim 1 or its dependent claims 2-5 and 7-11under 35 U.S.C. § 102. Independent claims 12, 13 16, 17, and 18 contain similar limitations concerning the temporal and spatial interaction with the control of the temporal phase and delay of one of the pulses/wavefronts as argued by appellant at pages 10-12 of the brief. We agree with appellant and furthermore, the examiner has not addressed these limitations or responded to appellant's arguments thereto. Therefore, we will not sustain the rejection of claims 12, 13, 16, 17, and 18 and their dependent claims.

With respect to claim 23, appellant argues that this claim is directed to a broadened form of the other claims.

Appellant relies on the claim language "simultaneously" in the context of the other limitations. Appellant argues that in this manner, he is broadly claiming the time- and phase-based addressing of a volume of radiation memory. (See brief at page 13.) We disagree with appellant. We find insufficient support in the express language of claim 23 to support appellant's argument concerning time- and phase-based limitations

as in the other independent claims. Therefore, we find this argument unpersuasive, and we will sustain the rejection of claim 23. Since appellant has not separately argued any of dependent claims 24-30, they fall with claim 23.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1-5 and 7-11 under 35 U.S.C. § 112, first and second paragraphs is reversed; the decision of the examiner to reject claims 1-5 and 7-22 under 35 U.S.C. § 102 is reversed and the decision of the examiner to reject claims 23-30 under 35 U.S.C. § 102 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRM-IN-PART

KENNETH W. HAIRSTON Administrative Patent Judge	)
JOSEPH L. DIXON Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)

jld/vsh

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FUESS, DAVIDENAS & MEADOWS
ATTORNEYS AT LAW
10951 SORRENTO VALLEY ROAD SUITE II-G
SAN DIEGO , CA 92121-1631